

U.S. Patent Application No. 10/721,215
Request for Reconsideration dated June 12, 2006
Reply to Office Action of March 22, 2006

REMARKS

Reconsideration and continued examination of the above-identified application are respectfully requested. Claims 1-14 are pending in the present application.

At page 2 of the Office Action, the Examiner rejects claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over Fife (U.S. Patent No. 6,051,044). The Examiner asserts that Fife discloses a method of forming a nitrided valve metal and that the nitriding can be performed at any or multiple processing stages. The Examiner further asserts that Fife discloses that the powder can be nitrided by exposure to air during the degassing of the ingot chip, and thus motivates one of ordinary skill to nitride early in the forming process. The Examiner further asserts that Fife discloses that the nitriding can take place during a thermal treatment at a temperature of 70° C to 500° C. The Examiner further asserts that Fife discloses an example wherein the nitriding takes place prior to oxidation in a nitrogen atmosphere and prior to deoxidation. The Examiner refers to other parts of Fife relating to thermal agglomeration, sintering, and hydrogen degassing. Further, the Examiner asserts that the nitriding taking place in Fife is at a higher temperature than the range set forth in the claims, but the Examiner asserts that the nitriding by air during passivation meets the pending claims.

Also, at page 2 of the Office Action, the Examiner asserts that there is support in Fife to support nitriding at any thermal treatment step during processing and refers to col. 3, lines 49-65, of Fife. The Examiner further asserts that the nitrogen doping described at col. 17, line 23 to col. 18, line 35, is during deoxidation. Otherwise, the Examiner's rejection is a duplication of the previous assertions made in the previous Office Action. For the following reasons, this rejection is respectfully traversed.

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Claim 1, as currently pending, recites a process of preparing a nitrided valve metal wherein the nitriding occurs during a heat treatment that is prior to a deoxidation step. Furthermore, claim 1 recites that the nitriding occurs at a temperature of from about 200° C to about 600° C.

Unlike the claimed invention, Fife does not teach or suggest all of the limitations of claim 1 and the claims dependent on claim 1.

The Examiner's comments at the top of page 2 of the Office Action are not completely understood with respect to the relevance of the patentability of the present invention. If the nitrogen doping that the Examiner refers to occurs during the deoxidation, then the nitrogen doping does not occur prior to any deoxidation step. This language is specifically recited in claim 1, where it states that the nitriding occurs prior to a deoxidation step. Thus, by the Examiner's own comments, clearly the portion that the Examiner is relying on for purposes of maintaining this rejection would not support the rejection. As indicated in the previous response, Fife actually shows nitriding occurring after the deoxidation step, but even if the Examiner's comments are taken as accurate, nitrogen doping of the niobium would occur during the deoxidation, which is clearly different from nitriding prior to any deoxidation. Col. 17, line 23, to col. 18, line 35, clearly states that the nitriding occurs after magnesium chips have been introduced with the niobium and the temperature significantly raised. Thus, this portion of Fife shows nitriding occurring after deoxidation or, at best, during deoxidation, but certainly not prior to deoxidation since the magnesium chips are clearly introduced prior to any introduction of nitrogen as clearly stated at col. 17 of Fife.

Furthermore, with respect to the Examiner's assertion that Fife supports nitriding at any

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thermal treatment step during processing and refers to col. 3, lines 49-65, the applicants note that Fife, at this portion relied upon by the Examiner, does not provide at all any temperature range for purposes of nitriding prior to deoxidation. Thus, the reference to any thermal treatment step must be understood in the context of what a thermal treatment step is with respect to niobium powders. A thermal treatment step is typically an agglomeration step or possibly a sintering step. A thermal treatment step is not associated with a deoxidation step. However, as shown in Fife, deoxidation can occur at high temperatures. Thus, the fact that Fife refers to any thermal treatment step still does not support the rejection of the claims, especially since Fife, at col. 3, does not provide any temperature ranges with respect to nitriding prior to a deoxidation step at the particular temperature ranges recited in the claims. Thus, it is not clear how the Examiner's additional comments at the top of page 2 justify the maintaining of this rejection.

In particular, with respect to the Examiner's assertion that Fife discloses nitriding taking place during a thermal treatment at a temperature of 70° C to 500° C, it appears the Examiner is referring to col. 17, lines 23-30, of Fife. It is respectfully noted that in this particular passage, the niobium powder was first mixed with 4 wt% magnesium powder and heated to 800° C in argon prior to being cooled and then nitrided. As the Examiner should appreciate, the mixing of the niobium powder with 4 wt% magnesium powder is a deoxidation step and, therefore, this particular passage refers to a nitriding occurring after a deoxidation step. Accordingly, this passage of Fife clearly does not teach or suggest the claimed invention.

With respect to the nitriding discussed in Fife at col. 18, lines 9-35, and relied upon by the Examiner, it is respectfully noted that at this passage of Fife, the nitriding occurs at a temperature of no less than 752° C. In particular, at col. 18, lines 14-16, it states that after

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cooling the furnace, the nitrogen was pumped to a targeted level, and refers to the Table in col. 18. As the Examiner will note, temperatures for the nitriding are given, which are 752° C or 932° C. These temperatures are quite higher than the about 600° C set forth in claim 1 of the present application. Furthermore, it is noted that in the passages following this section, beginning at col. 18, line 32, the reference to the nitrogen doping at this stage is after deoxidation.

Furthermore, from a review of Fife, there appears to be no teaching or suggestion of nitriding a valve metal during a heat treatment that is prior to a deoxidation step wherein the nitriding occurs at a temperature of from about 200° C to about 600° C. The Examiner has not identified any part of Fife which shows nitriding at a temperature of from about 200° C to about 600° C prior to a deoxidation step. The low temperatures mentioned in Fife are with respect to nitriding during or after a deoxidation step. Accordingly, contrary to the Examiner's assertions, Fife does not teach or suggest the claimed invention, and this rejection should be withdrawn. The Examiner is encouraged to contact the undersigned to discuss this matter by telephone should the Examiner believe that Fife does specifically show all of the limitations of claim 1 of the present application.

At page 4 of the Office Action, the Examiner then rejects claims 8 and 12 under 35 U.S.C. §103(a) as being unpatentable over Fife in view of Chang (U.S. Patent No. 5,448,447). The Examiner relies on Fife in the same manner as set forth in the above §102 rejection. The Examiner recognizes that Fife does not disclose a method which nitrides tantalum. The Examiner asserts that it would be obvious to use the method of Fife to nitride tantalum or niobium in view of the information provided in the background of Fife, as well as the assertion

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that Chang teaches that one of ordinary skill in the art can select tantalum instead of niobium to make a desirable capacitor. For the following reasons, this rejection is respectfully traversed.

With respect to the deficiencies set forth above with respect to Fife in the §102 rejection, the same deficiencies apply in the present obviousness rejection. Fife and Chang do not teach or suggest nitriding occurring prior to a deoxidation step wherein the nitriding occurs at a temperature of from 200° C to about 600° C. As stated above, Fife does not teach or suggest these particular steps of nitriding together to form a nitrided valve metal. Furthermore, Chang does not overcome these deficiencies as apparently appreciated by the Examiner.

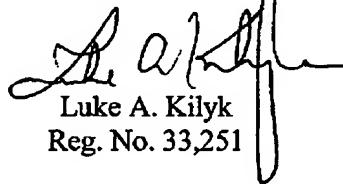
For these reasons, this rejection should be withdrawn as well.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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